CONSERVATION STATUS OF *LESQUERELLA LESICII* IN MONTANA

Prepared by:

Peter Lesica
Conservation Biology Research
929 Locust
Missoula, Montana 59802

and

Montana Natural Heritage Program
State Library
1515 East Sixth Avenue
Helena, Montana 59620

Prepared for:

USDA Forest Service Region One
Wildlife, Fisheries, and Botany Unit
P.O. Box 7669
Missoula, Montana 59802

and

USDI Bureau of Land Management
Montana State Office
P.O. Box 36800
Billings, MT 59107-6800

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I. SPECIES INFORMATION

A. CLASSIFICATION

1. SCIENTIFIC NAME: *Lesquerella lesicii* Rollins

2. SYNONYMS: None

3. COMMON NAME: Pryor Mountain bladderpod

4. BIBLIOGRAPHIC CITATION: Rollins, R. C. 1995. Two Lesquerellas (Cruciferae) of South Central and Western Montana. Novon 5: 71-75.

5: TYPE SPECIMENS: U.S.A. Montana: abundant in gravelly limestone-derived soil at the edge of limber pine woodland on the ridge W of Layout Creek 1/2 mi. S of Mystery Cave, Pryor Mountains, Carbon County, 7500 ft. T8S R28E S21 SW1/4, with *Shoshonea pulvinata, Astragalus aretioides*, and *A. miser*, 20 June 1992, *Peter Lesica 5707 and Rob DeVelice* (holotype, GH).

6. FAMILY: Brassicaceae (Cruciferae)

7. GENUS: The genus *Lesquerella* contains about 95 species, an estimated 83 in North America and 12 in temperate South America. Centers of diversity for the genus are southwestern and western North America (Rollins 1993).

8. SPECIES: *Lesquerella lesicii* was first collected by Peter Lesica in 1991 near Mystery Cave in the Pryor Mountains, Carbon Co., Montana. Specimens were sent to Reed Rollins at the Harvard University herbaria. Rollins requested more material. Further collections were made from the Mystery Cave site and a site on Sykes Ridge in 1992 and sent to Rollins who used them as a basis for describing the species in a paper published in *Novon* in 1995.

The species is considered most closely related to *L. fremontii*, endemic to west-central Wyoming about 200 miles south of the Pryor Mountains. Both species are confined to calcareous soils.

B. PRESENT LEGAL OR FORMAL STATUS

1. FEDERAL STATUS

a. U.S. Fish and Wildlife Service: None.

b. U.S. Forest Service: None.

2. STATE STATUS: *Lesquerella lesicii* is currently listed by the Montana Natural Heritage Program as critically imperiled globally and in Montana because of extreme rarity (G1-S1). These state listings do not provide any direct legal protection.

C. DESCRIPTION

1. GENERAL NONTECHNICAL DESCRIPTION: Pryor Mountain bladderpod is a short-lived perennial with few, unbranched, prostrate to ascending stems arising from an unbranched rootcrown and taproot. The basal leaves have petioles, 1-3 cm (ca. 1 in) long, and spade-shaped blades, shorter than the petiole, with entire margins. The alternate stem leaves are much smaller, broadly lance-shaped and without petioles. Foliage is sparsely covered with sessile, star-shaped hairs. Yellow, stalked flowers are borne at the top of the stems in a narrow inflorescence that elongates as the fruit matures. Each flower has 4 separate petals, 4 separate sepals, and 4 long and 2 short stamens. The globose capsules (silicles) with a short style on top are borne on reflexed stalks. Photographs are provided in Appendix A.

2. TECHNICAL DESCRIPTION: Delicate perennial; caudex simple, sometimes elongated and with old leaf bases; basal leaves erect, usually fewer than 10,

entire, 1.5-3 cm long, petioles slender, abruptly expanded to blade, 1-2.5 cm long, blades broadly ovate to elliptical, 0.5-1 cm long, silvery from a dense cover of stellate trichomes; leaf trichomes small, ca. 0.02 mm diam., ray tips 15-25, each primary ray forked near its base; flowering stems very slender, mostly filiform, simple, erect to decumbent, 1-1.5 dm long; cauline leaves few, remote, ± spatulate, lower somewhat petiolate, upper cuneate at the base; inflorescences lax, rarely nodding, usually with fewer than 10 flowers; sepals erect, densely pubescent, oblong, nonsacate and without scarious margins, 3.5-4 mm long; petals yellow, often fading to light purple toward their tips, spatulate to nearly lingulate, 6-7 mm long; stamens strongly tetradynymous; infructescences lax, greatly elongated; fruiting pedicels filiform, recurved in a single arch to widely spreading, 5-10 mm long; siliques globose to subglobose, spreading at right angles to rachis to pendent, 3-4 mm diam., ± densely pubescent on exterior, valves glabrous on the interior; styles ca. 1.5 mm long, glabrous or with a few trichomes near their bases; ovules 3-5 per locule (Rollins 1995).

3. SIMILAR SPECIES AND FIELD CHARACTERS: The combination of reflexed or widely spreading fruiting pedicels and abruptly expanded leaf blades separates *L. lesicii* from other Montana species of *Lesquerella*. The unlobed, nearly round fruits distinguish *L. lesicii* from members of the closely related genus *Physaria*. *Lesquerella lesicii* differs from *L. fremontii*, the most closely related species found in Wyoming, in having basal leaves with very thin petioles that expand abruptly to the blade. Fruiting pedicels of *L. lesicii* are very fine and fragile, while those of *L. fremontii* are thicker and less fragile.

D. GEOGRAPHIC DISTRIBUTION

1. RANGE: *Lesquerella lesicii* is currently known to occur only in the southeast Pryor Mountains of Carbon County, Montana at 5,00-7,600 ft in the drainage of Big Coulee east to the summit of Sykes Ridge.

2. RECENTLY VERIFIED SITES: There are three known populations of *L. lesicii* in the area described above. All of these populations were verified and surveyed in 1995. Voucher specimens are deposited at MONTU. Exact legal descriptions are given in Appendix B, and maps showing the location of the populations are provided in Appendix C.

3. HISTORICAL SITES: None known

4. UNSUCCESSFULLY SEARCHED AREAS: As part of a survey for the BLM and U.S. Forest Service, Lesica spent eight days searching for *L. lesicii* on the south and west sides of the Pryor Mountains. He also searched in the limestone hills along the east front of the Beartooth Mountains south of Red Lodge, across the Clark's Fork of the Yellowstone River from the Pryor Mountains.

5. AREAS YET TO BE SEARCHED: *Lesquerella lesicii* occurs on the dissected slopes on the west side of Big Coulee at 5,800-6,100 ft., and it likely occurs on the east side as well, but this area was not searched.

   Lesquerella lesicii may occur in similar habitat in the Big Horn Mountains of the Crow Indian Reservation of Big Horn County, Montana or adjacent Big Horn and Sheridan counties, Wyoming.

E. HABITAT

1. ASSOCIATED VEGETATION: *Lesquerella lesicii* occurs in two types of habitat:

(1) Rocky Mountain juniper-mountain mahogany woodlands with a sparse overstory of *Juniperus scopulorum*, and/or *Cercocarpus ledifolius* and widely scattered *Pseudotsuga menziesii* The shrub layer may have scattered *Symphoricarpos oreophilus*, *Artemisia nova* or *A. tridentata*. The ground layer is dominated by *Agropyron spicatum Koeleria cristata* and *Carex rossii*. Common forbs include *Musineon vaginatum, Haplopappus acaulis, Phlox hoodii, Lesquerella alpina*, and *Cerastium arvense*. These woodlands are generally on moderate to steep slopes at the low elevational limits of Douglas fir. This is the *Cercocarpus ledifolius/Agropyron spicatum* habitat type of Mueggler and Stewart (1980). *Juniperus osteosperma* replaces *J. scopulorum* at the lower limits of the population. This type was described as the *Juniperus osteosperma/Cercocarpus ledifolius* community type by DeVelice and Lesica (1993)

(2) Bluebunch wheatgrass-cushion plant fellfields with the grasses, *Agropyron spicatum Poa secunda* and *Koeleria cristata*. Low forbs usually dominate these habitats; common species include *Phlox hoodii, Draba oligosperma, Eritrichium howardii, Lomatium cous, Astragalus miser, A. spatulatus, Potentilla ovina, Haplopappus acaulis*, and *Hymenoxys torreyana*. These sites are usually open, exposed ridge crests surrounded by forests of *Pseudotsuga menziesii* and *Pinus flexilis*. This vegetation has been described by DeVelice and Lesica (1993) as the *Agropyron spicatum*/cushion plant community type.

Both habitats have a high proportion of unoccupied soil, with 50-80% of the soil surface barren. Plants may occur in partial shade, but are generally in full sun.

2. TOPOGRAPHY: The juniper-mountain mahogany woodland habitat generally occurs on moderate to steep

slopes at 5,800-6,300 ft in elevation. Slopes may be any aspect, but warm slopes predominate.

The cushion plant fellfield habitat occurs on gentle slopes of exposed ridge crests at 6,700-7,600 ft in elevation. Most sites have a southerly aspect.

3. SOIL RELATIONSHIPS: *Lesquerella lesicii* occurs only on soils derived from Madison limestone. Soils of the juniper-mountain mahogany habitat are sandy with a high proportion of coarse fragments. Soils of the cushion plant fellfield habitat are very shallow with a very high proportion of coarse fragments.

4. REGIONAL CLIMATE: The south side of the Pryor Mountains has a semi-arid climate. Lovell, 10 miles south, receives an average annual precipitation of 7.1 inches. Daily temperatures averaged 16.8° F in January and 71.8° F in July (Knight et al. 1987). Higher elevations receive 12-14 inches of precipitation (USDA-SCS 1981), and are probably ca. 10° cooler.

The Mystery Cave subpopulations of *L. lesicii* occur in sites that are exposed to high winds; however, the two lower populations are not on particularly exposed sites.

5. DYNAMIC ABIOTIC FEATURES: Evidence of frost heaving of the shallow soil was observed at the Mystery Cave sites but not at the Big Coulee and Sykes Ridge sites. This disturbance along with the wind exposure may curtail the establishment of dense vegetation. The open nature of the vegetation at this relatively high-elevation site may be important to the persistence of *L. lesicii*.

The steep slopes of the Big Coulee and Sykes Ridge sites may also promote moderate disturbance from soil movement. This moderate disturbance may be a positive component of *L. lesicii* habitat quality.

F. POPULATION BIOLOGY

1. PHENOLOGY: *Lesquerella lesicii* has been collected in flower throughout the month of June. Flowering probably commences at lower elevations in early June and ends at higher elevations in mid-July. Mature fruit are probably present starting in early July at lower elevations.

2. POPULATION SIZE AND CONDITION

a. The Mystery Cave population has at least six subpopulations separated by 1/8-3/4 mile. Total population size is estimated to be 3,000-20,000 plants in 1995. Plants were small compared to those at the Sykes Ridge site; however, a large proportion of plants were flowering in 1992 and in 1995, and there is no reason to believe that the population is declining.

b. The Big Coulee population covers an area of 100-150 acres, but the plants are sparsely distributed, and most of the area is not occupied. Total population size is estimated to be 1,000-4,000 plants in 1995. However, it is likely that *L. lesicii* also occurs in the unexplored area on the east side of Big Coulee, so this population may be much larger.

c. The Sykes Ridge population has a high density of plants over an area of 300-500 acres. Total population size is estimated to be 10,000-100,000 plants in 1995. Plants were large compared to the other populations. This appeared to be the most vigorous of the three *L. lesicii* populations.

3. REPRODUCTIVE BIOLOGY

a. TYPE OF REPRODUCTION: Reproduction is entirely by seed. It is not known whether *L.*

lesicii is self-compatible; however, many small-flowered species are self-fertilized (Ornduff 1969).

b. POLLINATION BIOLOGY: During 1995 surveys hover flies (Syrphidae) were observed landing on the flowers of *L. lesicii* on one or two occasions. These are the only known observations on the pollination biology of this species.

c. SEED DISPERSAL AND BIOLOGY: The inflated siliques of *L. lesicii* appear to be adapted for wind pollination (van der Pijl 1982, p. 64). *Lesquerella lesicii* often occurs in very windy habitats, so dispersal for appreciable distances may be frequent.

Germination requirements are not known.

d. SEEDLING BIOLOGY: *Lesquerella lesicii* occurs in arid environments; seedlings may require moist spring or fall weather or other ameliorating conditions to survive. There is no data on seedling survival.

4. DEMOGRAPHY: The delicate stature and unbranched caudex of *Lesquerella lesicii* suggest that it is a short-lived perennial as are many species in the genus (Rollins and Shaw 1973). Demographic studies of *L. lesicii* have not been done.

G. ECOLOGY

1. BIOLOGICAL INTERACTIONS

a. COMPETITION AND FACILITATION: *Lesquerella lesicii* is a low, not very robust plant occurring in habitats with 50-80% bare ground. Many other species of *Lesquerella* and other members of the Brassicaceae have a ruderal life history (Rollins and Shaw 1973, Rollins 1993). These observations suggest

that *L. lesicii* may be a poor competitor. On the other hand, there is also evidence for interspecific facilitation. On the hot, west-facing slopes of Sykes Ridge *L. lesicii* is usually found beneath shrubs such as *Cercocarpus ledifolius* and *Symphoricarpos oreophilus* or growing up within or immediately adjacent to clumps of *Agropyron spicatum*. At the higher Mystery Cave site *L. lesicii* grows in the open soil, usually not in close proximity to larger plants. Assuming that the lower, hotter slopes at the Sykes Ridge site are a more stressful environment, it appears that *L. lesicii* is being facilitated by larger plants under stressful conditions, while this interaction is not prevalent when the stress is relaxed. A similar phenomenon has been reported by Greenlee and Callaway (in press). They found that *L. carinata* seedlings survived better under bunchgrass in a dry year, but survivorship was lower in plants associated with bunchgrass in a wet year. These examples support the hypothesis that facilitation is favored by stressful conditions (Bertness and Callaway 1994). It is likely that both competition and facilitation play a role in the population dynamics of *L. lesicii*.

b. HERBIVORY: There is no evidence for herbivory of *L. lesicii*. It is possible that a small amount of grazing by bighorn sheep may occur in the winter,

c. OTHER NEGATIVE INTERACTIONS: The largest population of *L. lesicii* occurs on steep west-facing slopes of Sykes Ridge. Plants are frequently associated with shrubs or clumps of bunchgrass. These slopes have been severely terraced so that there are parallel trails, 1-2 ft wide, every 3-6 ft of vertical distance. These trails are completely

barren. While *L. lesicii* plants are common above and below the trails, they do not occur on them. Perhaps as much as 20% of the habitat on Sykes Ridge has been lost to terracing.

Terracing of fragile steep slopes is common in the Sykes Ridge area of the Pryor Mountain Wild Horse Range. The wide trails are most likely the result of horses foraging for grass, although deer may also use these areas (Jay Parks, BLM Billings Resource Area, personal communication). Although *L. lesicii* is in no immediate danger of being extirpated from the Sykes Ridge site, it does appear that the presence of wild horses has had a negative impact on this population.

2. HYBRIDIZATION: *Lesquerella lesicii* and the widespread and common *L. alpina* occur together at some sites. The two species are quite different morphologically, and there were no intermediates observed in 1995 at any of the sites.

H. LAND OWNERSHIP

1. BUREAU OF LAND MANAGEMENT: The Mystery Cave *Lesquerella lesicii* population is entirely on land administered by the BLM. The Big Coulee population, as it is currently known, is also entirely on BLM land; however, it is ca. 1/4 mile from the southern boundary of lands administered by the Beartooth District of Custer National Forest. The vast majority of the Sykes Ridge site is also on land administered by BLM; however, a small part of this population on the extreme east and south sides is on Big Horn Canyon National Recreation Area. All of the BLM lands harboring *L. lesicii* are on the Pryor Mountains Wild Horse Range.

2. NATIONAL PARK SERVICE: A thin strip along the upper east-facing slope of Sykes Ridge and the

extreme south portion of the ridge support *L. lesicii*. This small portion of the Sykes Ridge population is on Big Horn Canyon National Recreation Area administered by the National Park Service.

3. U.S. FOREST SERVICE: *Lesquerella lesicii* is not currently known to occur on lands administered by the Forest Service, although F.S. lands immediately north of the known Big Coulee population were searched in 1995. It is still possible that a small number of plants may occur in this general area.

II. ASSESSMENT AND MANAGEMENT RECOMMENDATIONS

A. THREATS TO KNOWN POPULATIONS

1. WILD HORSES: All known populations occur on the Pryor Mountain Wild Horse Range managed by the Bureau of Land Management. Habitat supporting the largest known population of *Lesquerella lesicii* on Sykes Ridge has been degraded by the terracing of the steep slopes. The density of trails is quite high, and *L. lesicii* does not occur on these trails although it is common in adjacent, unimpacted vegetation. Trails are wide and are caused primarily by wild horses, although mule deer may also use the area (Jay Parks, BLM Billings Resource Area, personal communication). It is not known whether active terracing continues or the amount of degradation is now stable. Habitat supporting the Big Coulee and Mystery Cave populations shows some evidence of horse use, but the effects of trampling appeared to be minimal. Nonetheless, it is clear that horse grazing can have detrimental effects on populations of *L. lesicii*, and at least the lower elevation populations are likely to decline if horse grazing is increased.

2. RECREATION: The area in which *Lesquerella lesicii* occurs has a large number of caves including Sykes

Cave and Mystery Cave. These caves are occasionally used by recreationists, but impacts from recreation are not apparent. Populations of *L. lesicii* are, for the most part, found on steep or relatively inaccessible terrain. There appears to be little threat from off-road vehicle use or other human-caused impacts.

B. MANAGEMENT PRACTICES AND RESPONSE: Management of wild horse populations on the Pryor Mountain Wild Horse Range may be important for the persistence of *Lesquerella lesicii*. The Bureau of Land Management currently maintains the horse herd at ca. 120 animals (Jay Parks, BLM Billings Resource Area, personal communication). Any increase in the herd could cause further degradation of the Sykes Ridge population. However, a reduction of the wild horse herd to 95 animals has been proposed for the near future (Jay Parks, BLM Billings Resource Area, personal communication). This reduction in herd size should help ensure the stability of *L. lesicii* populations.

C. RECOMMENDATIONS FOR MAINTAINING VIABLE POPULATIONS: All currently known populations of *Lesquerella lesicii* are on the Pryor Mountain Wild Horse Range. All management plans for the Wild Horse Range should consider the possible effects on this locally common but globally rare plant. Wild horse numbers should be decreased rather than increased to ensure that the Sykes Ridge *L. lesicii* population does not decline further.

The largest known population of *L. lesicii* occurs on Sykes Ridge where horses have caused severe terracing of the steep, west-facing slopes. These slopes should be monitored for trend to determine whether loss of *L. lesicii* habitat is continuing. Photo-point monitoring is appropriate when the area being monitored is large and it is large physical features that are of interest. Photos should be taken to clearly show the size and distribution of horse trails at many points on the west slope of Sykes Ridge. Photo points should be permanently marked so that they can be exactly relocated.

The Crow Tribe and Big Horn National Forest should initiate searches for additional populations of *L. lesicii* in appropriate habitat on lands they administer in the Big Horn Mountains.

Lesquerella lesicii should be placed on a list of sensitive species maintained by the Montana BLM.

D. SUMMARY: *Lesquerella lesicii* is a local endemic known only from a small area on the southeast side of the Pryor Mountains of southern Carbon County, Montana. Undiscovered populations may occur in the nearby Big Horn Mountains of southern Big Horn County, Montana or adjacent Wyoming. *Lesquerella lesicii* is locally common in three populations that together contain ca. 20,000-100,000 plants. *Lesquerella lesicii* occurs in stony, calcareous soil derived from Madison Limestone, most commonly on warm aspects and is associated with Rocky Mountain juniper-mountain mahogany woodlands at 5,800-6,300 ft and with cushion plant fellfield communities of exposed ridges at 6,700-7,600 ft. Almost all of the habitat supporting populations of *Lesquerella lesicii* are found on the Pryor Mountain Wild Horse Range administered by the Bureau of Land Management. A small portion of the Sykes Ridge population is on the Big Horn Canyon National Recreation Area administered by the National Park Service.

Habitat of the largest known population of *L. lesicii* at Sykes Ridge has been lost due to wild horses creating a high density of trails on the steep slopes. *Lesquerella lesicii* is still common on these slopes but does not grow in the compacted soil of the trails. It is not known whether the amount of degraded habitat on Sykes Ridge is stable or increasing. The extent of trampling and terracing by wild horses should be monitored.

Lesquerella lesicii should be placed on a list of BLM sensitive species.

III. INFORMATION SOURCES

A. HERBARIUM SPECIMENS: Specimens of *Lesquerella lesicii* are deposited at the University of Montana (MONTU) and Harvard University (GH).

B. FIELD WORK: Field surveys were conducted by Peter Lesica in June and August of 1995 on the south and west sides of the Pryor Mountains. Field forms are deposited at the Montana Natural Heritage Program in Helena.

C. LITERATURE CITED

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Appendix A. Photographs of *Lesquerella lesicii* and its habitat. **Upper left:** *L. lesicii* with grass "nurse plant," **Upper right:** *L. lesicii* habitat at Mystery Cave, **Lower left:** *L. lesicii*, **Lower right:** *L. lesicii* habitat at Sykes Ridge, **Bottom:** *L. lesicii* habitat at Mystery Cave.

Appendix B. Element occurrence records for the three known populations of *Lesquerella lesicii*.

MONTANA NATURAL HERITAGE PROGRAM
Element Occurrence Record

Scientific Name: LESQUERELLA LESICII
Common Name: PRYOR MOUNTAIN BLADDERPOD

Global rank: G1 Forest Service status:
State rank: S1 Federal Status:

Element occurrence code: PDBRA1N240.003
Element occurrence type:

Survey site name: SYKES RIDGE
EO rank: A
EO rank comments: ~~SMALL POPULATION~~.

County: CARBON

USGS quadrangle: MYSTERY CAVE

Township:	Range:	Section:	TRS comments:
009S	028E	16	NE4; 9 SE4; 10 SW4; 15 W2; 22 N2

Precision: S
Survey date: 1993-06-19 Elevation: 6080 - 6160
First observation: 1993-06-19 Slope/aspect: 25-40% / WEST
Last observation: 1995-07-12 Size (acres): 300

Location:
FROM NEAR SYKES SPRING FISH HATCHERY, TAKE SYKES RIDGE ROAD NORTH. SITE IS ALL ALONG SYKES RIDGE.

Element occurrence data:
1995: 10,000 PLANTS, FLOWERING AND IN BUD. 1993: 1000-5000 PLANTS, FLOWERING, NO FRUIT YET.

General site description:
DRY, OPEN NON-GLACIATED UPPER SLOPE. LIMESTONE PARENT MATERIAL, SILTY SOIL. ASSOCIATED SPECIES: CERCOCARPUS LEDIFOLIUS, JUNIPERUS SCOPULORUM, AGROPYRON SPICATUM, MUSINEON VAGINATUM, PINUS FLEXILIS, HYMENOXYS TORREYANA, PHLOX HOODII, CAREX ROSSII, ARTEMISIA NOVA, PSEUDOTSUGA MENZIESII, JUNIPERUS OSTEOSPERMA, HAPLOPAPPUS ACAULIS, ZIGADENUS VENEOSUS.

Land owner/manager:
STATE LAND - UNDESIGNATED
BLM: MILES CITY DISTRICT, BILLINGS RESOURCE AREA
PRYOR MOUNTAIN WILD HORSE RANGE
BIGHORN CANYON NATIONAL RECREATION AREA

Comments:
OBSERVED BY P. LESICA AND B. HEIDEL. DISTURBANCE BY HORSE TRAILS.

Information source: LESICA, PETER. DIVISION OF BIOLOGICAL SCIENCES, UNIVERSITY OF MONTANA, MISSOULA, MT 59812. PHONE 406/728-8740.

Specimens: LESICA, P. (6000). 1993. MONTU.
LESICA, P. (6730). 1995. MONTU.

MONTANA NATURAL HERITAGE PROGRAM
Element Occurrence Record

Scientific Name: LESQUERELLA LESICII
Common Name: PRYOR MOUNTAIN BLADDERPOD

Global rank: G1 Forest Service status:
State rank: S1 Federal Status:

Element occurrence code: PDBRA1N240.004
Element occurrence type:

Survey site name: MYSTERY CAVE
EO rank: A
EO rank comments:

County: CARBON

USGS quadrangle: MYSTERY CAVE

Township:	Range:	Section:	TRS comments:
008S	028E	28	SW4, NW4; 21 SE4SW4; 29 SE4; 32 NE4; 33 W2

Precision: S
Survey date: 1995-06-13 Elevation: 6680 - 7600
First observation: 1995-06-13 Slope/aspect: 25-30% / SE, SW, WEST
Last observation: 1995-06-13 Size (acres): 40

Location:
PRYOR MOUNTAINS, ALONG SYKES RIDGE ROAD FROM 0.5 MILE TO 2.3 MILES SOUTH OF MYSTERY CAVE.

Element occurrence data:
3 SUBPOPULATIONS WITH 5,000 TO 20,000 PLANTS, EARLY FLOWERING.

General site description:
DRY, OPEN RESIDUAL MOUNTAIN SLOPE RIDGE. LIMESTONE PARENT MATERIAL, SHALLOW, STONY SOIL. ASSOCIATED SPECIES: AGROPYRON SPICATUM, PHLOX HOODII, DRABA OLIGOSPERMA, ERITRICHIUM HOWARDII, ANTENNARIA AROMATICA, LOMATIUM COUS, CAREX ROSSII, PSEUDOTSUGA MENZIESII, PINUS FLEXILIS, KOELERIA CRISTATA, POA SECUNDA, SELAGINELLA DENSA, HAPLOPAPPUS ACAULIS, HYMENOXYS ACAULIS, ASTRAGALUS MISER, JUNIPERUS SCOPULARUM, KELSEYA UNIFLORA, HYMENOXYS TORREYANA, ASTRAGALUS SPATHULATUS.

Land owner/manager:
PRYOR MOUNTAIN WILD HORSE RANGE
BLM: MILES CITY DISTRICT, BILLINGS RESOURCE AREA

Comments:

Information source: LESICA, PETER. DIVISION OF BIOLOGICAL SCIENCES, UNIVERSITY OF MONTANA, MISSOULA, MT 59812. PHONE 406/728-8740.

Specimens: LESICA, P. (6732, 6737, 6739). 1995. MONTU.

MONTANA NATURAL HERITAGE PROGRAM
Element Occurrence Record

Scientific Name: LESQUERELLA LESICII
Common Name: PRYOR MOUNTAIN BLADDERPOD

Global rank: G1 Forest Service status:
State rank: S1 Federal Status:

Element occurrence code: PDBRA1N240.005
Element occurrence type:

Survey site name: BIG COULEE
EO rank: A
EO rank comments: LITTLE DISTURBANCE OTHER THAN EROSION.

County: CARBON

USGS quadrangle: MYSTERY CAVE

Township:	Range:	Section:	TRS comments:
009S	028E	6	E2

Precision: S
Survey date: 1995-07-15 Elevation: 5800 - 6180
First observation: 1995-07-15 Slope/aspect: 50% / NE
Last observation: 1995-07-15 Size (acres): 50

Location:
PRYOR MOUNTAINS, 0.6 AIR MILE EAST OF ROYCE CAVE, ALONG SLOPE EAST OF BURNT TIMBER RIDGE ROAD, CA. 0.5 MILE SOUTH OF FS BOUNDARY FENCE.

Element occurrence data:
1,000-10,000 PLANTS, IN FLOWER AND EARLY FRUIT. SPARSE AND PATCHY DISTRIBUTION.

General site description:
DRY, OPEN RESIDUAL MOUNTAIN LOWERSLOPE. LIMESTONE PARENT MATERIAL, SANDY SOIL. ASSOCIATED SPECIES: PSEUDOTSUGA MENZIESII, JUNIPERUS SCOPULARUM, ARTEMISIA TRIDENTATA, AGROPYRON SPICATUM, KOELERIA CRISTATA, PHLOX HOODII, CERASTIUM ARVENSE, MUSINEON VAGINATUM.

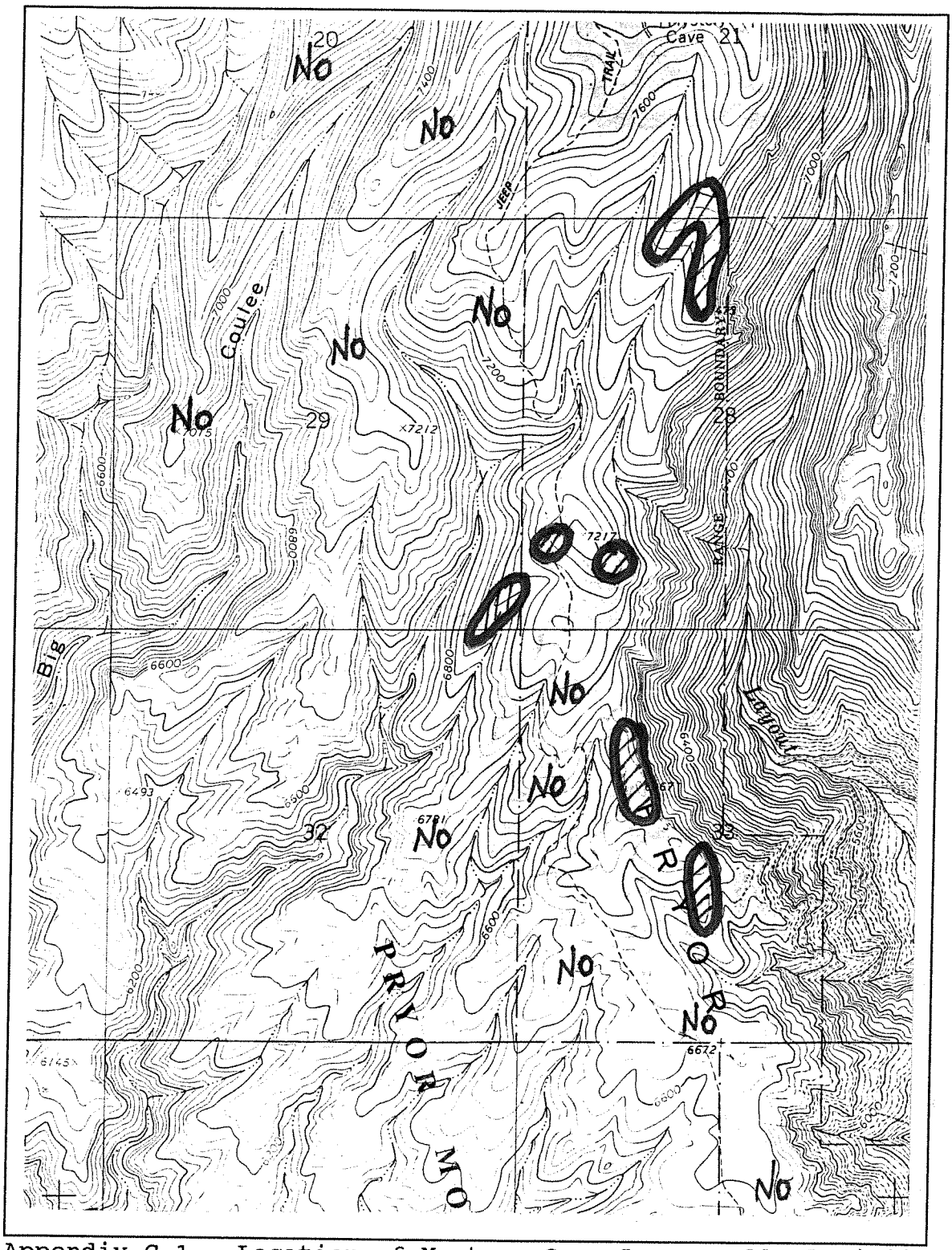
Land owner/manager:
PRYOR MOUNTAIN WILD HORSE RANGE
BLM: MILES CITY DISTRICT, BILLINGS RESOURCE AREA

Comments:
OBSERVED BY P. LESICA.

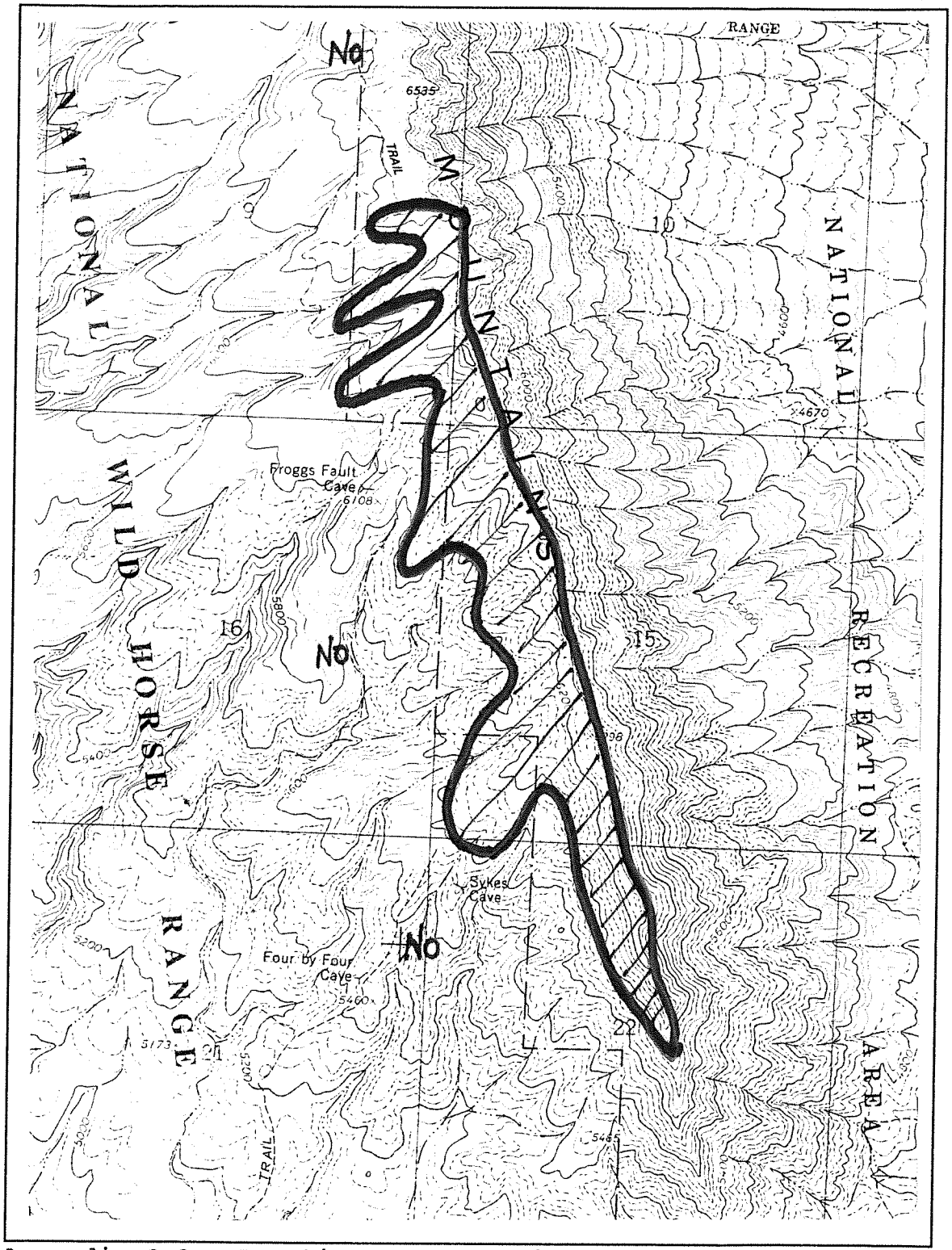
Information source: LESICA, PETER. DIVISION OF BIOLOGICAL SCIENCES, UNIVERSITY OF MONTANA, MISSOULA, MT 59812. PHONE 406/728-8740.

Specimens: LESICA, P. (6742). 1995. MONTU.

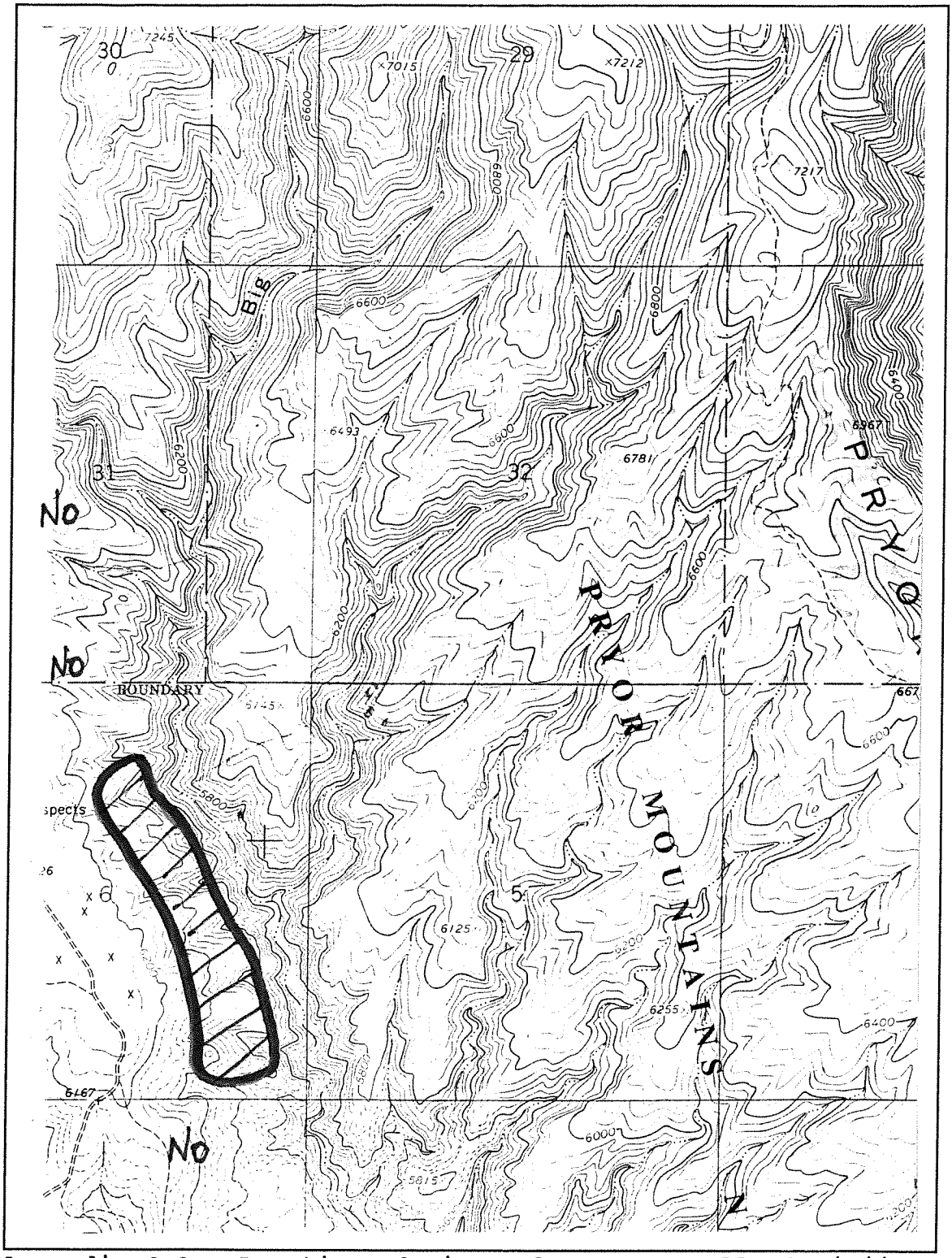
Appendix C. Locations of the known populations of *Lesquerella lesicii* and the area searched unsuccessfully.



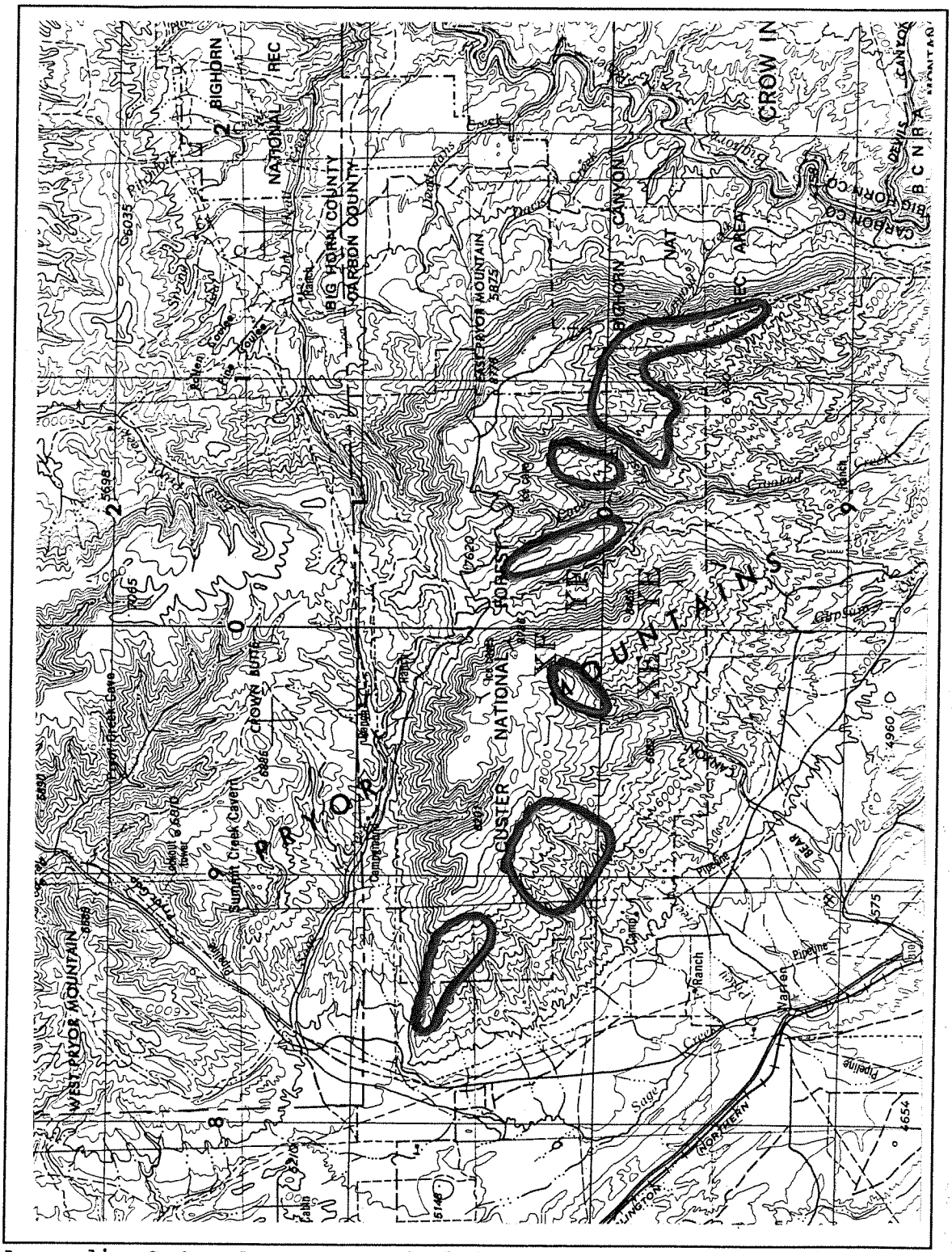
Appendix C-1. Location of Mystery Cave *Lesquerella lesicii* population.



Appendix C-2. Location of Sykes Ridge *Lesquerella lesicii* population.



Appendix C-3. Location of Big Coulee *Lesquerella lesicii* population.



Appendix C-4. Areas searched for *Lesquerella lesicii* in 1995.